Forcing the North Korean Nuclear Genie Back into the Bottle: Can It Be Done?

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I. Introduction

In the essay below, Fred McGoldrick responds to North Korea's January 10, 2003 announcement of their intended withdrawal from the Nuclear Nonproliferation Treaty by outlining what concrete steps the DPRK could take to implement a freeze of its uranium enrichment activities. McGoldrick also attempts to answer the following questions: What enrichment activities should the DPRK "freeze"? Who should verify such a freeze? How should such a freeze be verified?

McGoldrick has been involved in the field of nuclear nonproliferation and international nuclear cooperation for over 25 years. He has served in the U.S. Mission to the International Atomic Energy Agency, U.S. Department of State, and the U.S. Department of Energy. McGoldrick retired from the State Department in 1998. McGoldrick is currently a principal and manager in the consulting firm, Bengelsdorf, McGoldrick and Associates, an international consulting firm.

The views expressed in this essay are those of the author and do not necessarily reflect the official policy or position of the Nautilus Institute. Readers should note that Nautilus seeks a diversity of views and opinions on contentious topics in order to identify common ground.

II. Essay by Fred McGoldrick

"Forcing the North Korean Nuclear Genie Back into the Bottle: Can It Be Done?"
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In early October meetings with U.S. representatives, officials of the Democratic People's Republic of Korea (DPRK) acknowledged the existence of a clandestine centrifuge uranium enrichment program. In December, the DPRK announced that it had decided to restart the 5 Mw reactor at Yongbyong and to resume construction of larger reactors at Taechon at Yongbyong that had been "frozen" under the 1994 U.S.-DPRK Agreed Framework. Subsequently the North Koreans removed seals and impeded the functioning of the essential surveillance equipment that the International Atomic Energy Agency (IAEA) had installed at the various facilities at Yongbyong and expelled the two remaining IAEA inspectors. On January 10, 2003, the DPRK announced that it was leaving the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

These developments have led to major regional and international concerns and to an urgent search for ways to reduce tensions between the DPRK and the U.S. While the DPRK may be unlikely to agree to move immediately into full compliance with all its nonproliferation obligations, it may as part of a negotiation process agree to a verified freeze of its uranium enrichment program.

The North Koreans have said that they are open to discussion of international inspections of the uranium facilities and that "everything will be negotiable" including the dismantling of the enrichment program. However, they have apparently laid down certain conditions, namely that the U.S. would agree to a non-aggression treaty, recognize the North Korean Government and sign a U.S.-North Korean peace treaty. "

This paper examines steps that the North Koreans might take to help resolve the nuclear crisis by taking steps to freeze their enrichment program. (This would, of course, have to be accompanied by a resumption of the freeze on the activities covered by the Agreed Framework.). Assuming that the DPRK and the United States make headway on resolving the crisis, it should be relatively straightforward, albeit time-consuming and expensive, to re-establish monitoring of a DPRK "refreeze" on its plutonium-related activities.

Verifying a freeze of North Korean enrichment activities is another matter, however. Freezing the DPRK's enrichment program would present new and different issues and challenges than those involved in the IAEA re-instituting its monitoring procedures at the reactors and reprocessing facility covered by the Agreed Framework.

In many ways, monitoring and verifying enrichment facilities may be much harder to achieve. The 5 MW reactor and reprocessing plant at Yongbyong and the two reactors under construction at Yongbyong and Taechon are large, denotable facilities where the IAEA has already operated a verification regime. By contrast, based on the information made publicly available so far, we lack much basic information about North Korea's enrichment activities. For example, there are uncertainties concerning the nature, number and location of activities associated with the enrichment program, how long the activities have been taking place, and what progress the DPRK has made in enriching uranium.

Hence, an extensive and rigorous on-site inspector presence with broad access rights and detailed information would be necessary to provide any meaningful degree of confidence that the DPRK had indeed frozen all of its enrichment activities. To enable the effective monitoring of an enrichment freeze, the DPRK would need to make a detailed declaration concerning its program, and the

verifying agency would need broad authority to determine the correctness and completeness of that declaration. Such a declaration should encompass all aspects of its enrichment activities, including records and locations of imports, all R&D and testing programs as well as all facilities related to the enrichment of uranium.

The IAEA is the most logical agency to monitor such a freeze since it is experienced in inspecting nuclear material and facilities and monitored the freeze under the Agreed Framework. However, if political conditions dictate, the U.S. or the ROK could also participate in verifying such a freeze, and it is even conceivable that a nongovernmental organization could play a catalytic, albeit limited role in initiating inspections. However, it will be important to maintain a material role for the IAEA in such an exercise in order to press the DPRK to meet its obligations to accept IAEA safeguards under the NPT and monitoring under the Agreed Framework and to facilitate the transition to full compliance by the DPRK with it various nonproliferation obligations.

As a technical matter, the verification of the freeze on declared activities should be relatively straightforward. The verifying agency should have access to all declared facilities. Such facilities would be subject to inspection in order to verify correctness and completeness of the DPRK declaration. But the real challenge will be to determine whether the North Korean declaration of its enrichment program is correct and complete, or whether the DPRK may be withholding information from the inspecting agency and whether it operates clandestinely one or more elements of its enrichment program.

This concern is particularly important in light of the fact that North Korea apparently decided to embark on a clandestine enrichment program in violation of its international obligations. Moreover, detecting a centrifuge enrichment program through national technical means is much more difficult than observing reactor operations. It would not be difficult to hide facilities for manufacturing or assembling centrifuges for uranium enrichment. Centrifuge enrichment itself does not require a large facility with clear signatures. A facility could be located underground, and we know that the national pastime of the DPRK is to dig tunnels. Hence an extensive and rigorous on-site (boots and eyes on the ground) inspection regime would be required to achieve any reasonable level of confidence that the North Korean declaration of its enrichment program was correct and complete.

The effectiveness of any such verification regime will depend on 1) the extent to which North Korea would allow extensive access, i.e., including short-notice inspections of suspect sites 2) the extent to which the DPRK would permit environmental monitoring, 3) the extent to which the inspecting agency would receive quality information from national governments on the location of suspect clandestine enrichment activities, and 4) the extent to which the inspecting agency would have access to adequate financial resources. (The IAEA has been subject to a zero-real-growth in its regular budget since 1984.)

However rigorous the regime for monitoring a freeze of the North Korean enrichment program might be, it would not be able to assure with certainty the absence of clandestine enrichment activities, and the conclusions that an inspecting agency would draw would most likely be qualified but may be judged adequate.

The logical next step following a verified freeze of the North Korean uranium enrichment program and the re-institution of the freeze on the reactors and associated facilities at Yongbyong and Taechen, would be a move by the DPRK toward compliance with its various nonproliferation obligations, including continued adherence to the NPT an to its full-scope NPT safeguards agreement with the IAEA and the termination and dismantlement of any program designed to acquire nuclear weapons. This shift in status could be accomplished all at once or on a gradual basis.

As part of this process it is imperative that an eventual resolution of the North Korean nuclear crisis include DPRK ratification of the Additional Protocol to IAEA safeguards agreements as approved in 1997 by the IAEA Board of Governors. The Additional Protocol gives the IAEA rights to increased information and access to all aspects of a state's nuclear fuel cycle-from uranium mines to nuclear wastes and to locations where nuclear material intended for non-nuclear uses is intended. Under the NPT safeguard agreements, inspectors' rights of access have been limited, and in practice the IAEA did not exercise fully the rights to conduct special inspections. For routine inspections the IAEA has been limited to key measuring points in declared facilities. The Additional Protocol gives complementary access rights to the Agency and its inspectors, e.g., access is possible to any place on a "site" or to mines or to nuclear related locations where no nuclear material is located, such as sites where related R&D or manufacturing activities are performed, in order to ensure the absence of undeclared activities.

It is noteworthy that, if the DPRK agreed to declare all aspects of its enrichment program as part of a freeze on its existing program, it would be well on its way to accepting the added responsibilities of the Additional Protocol. For example, the Additional Protocol provides for the provision of information, among other things, on the location of nuclear fuel cycle-related R&D not involving nuclear material and specifically related to enrichment, a description of the scale of operations for each location engaged in activities related to the manufacture of centrifuge rotor tubes or the assembly of gas centrifuges, and information on the import of enrichment equipment. These rights could be crucial in helping ensure that there are not additional illicit North Korean activities (beyond enrichment facilities) that have not yet surfaced.

If implemented effectively, the Additional Protocol, in combination with the DPRK's NPT safeguards agreement, would provide for as complete a picture as practical of the DPRK's holdings of nuclear material and its fuel cycle activities.

However, there will remain some inherent, irreducible uncertainty concerning the completeness of the DPRK declaration. At the end of the day, therefore, United States and the international community would have to live with and manage the effects of this residual uncertainty for as long as the DPRK continues to exist as a closed, totalitarian state.
